

| | Type | L # | Hits | Search Text | DBs |
|----|------|-----|------|---------------------------------|----------------------------|
| 1 | BRS | L1 | 2129 | 429/209,224,231.8,231.95.ccls. | USPA T; US-P GPUB |
| 2 | BRS | L2 | 1120 | li?sub.x | USPA T; US-P GPUB |
| 3 | BRS | L3 | 6539 | mno?sub.2 | USPA T; US-P GPUB |
| 4 | BRS | L4 | 120 | 2 adj 3 | USPA T; US-P GPUB |
| 5 | BRS | L5 | 113 | 4 and @ad<20000317 | USPA T; US-P GPUB |
| 6 | BRS | L6 | 106 | 5 and lithium and battery | USPA T; US-P GPUB |
| 7 | BRS | L7 | 92 | 6 and (propylene adj carbonate) | USPA T; US-P GPUB |
| 8 | BRS | L8 | 0 | x=0.05 adj to adj 1.2 | USPA T; US-P GPUB |
| 9 | BRS | L9 | 18 | x adj3 0.05 adj3 1.2 | USPA T; US-P GPUB |
| 10 | BRS | L10 | 12 | 7 and 9 | USPA T; US-P GPUB |
| 11 | BRS | L11 | 47 | 7 and 1.2 | USPA T; US-P GPUB |
| 12 | BRS | L12 | 45 | 7 not 11 | USPA T; US-P GPUB |
| 13 | BRS | L13 | 1 | 6168887.pn. | USPA T; US-P GPUB |

=> s (0.94-0.96)/li and 1/mn and 2/o

1624 (0.94-0.96)/LI

382438 1/MN

3987190 2/O

L1 221 (0.94-0.96)/LI AND 1/MN AND 2/O

=> s (0.94-0.96)/li and (0.75-0.94)/mn and (0.06-0.25)/al and 2/o

1624 (0.94-0.96)/LI

3933 (0.75-0.94)/MN

7630 (0.06-0.25)/AL

3987190 2/O

L2 12 (0.94-0.96)/LI AND (0.75-0.94)/MN AND (0.06-0.25)/AL AND 2/O

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

30.66

30.87

FILE 'CAPLUS' ENTERED AT 13:07:38 ON 24 DEC 2002

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FILE COVERS 1907 - 24 Dec 2002 VOL 137 ISS 26

FILE LAST UPDATED: 23 Dec 2002 (20021223/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> s l1

L3 93 L1

=> s l3 and battery

95777 BATTERY

76301 BATTERIES

104336 BATTERY

(BATTERY OR BATTERIES)

L4 86 L3 AND BATTERY

=> s l4 and lithium

247494 LITHIUM

331 LITHIUMS

247613 LITHIUM

(LITHIUM OR LITHIUMS)

L5 86 L4 AND LITHIUM

=> s 12

L6 4 L2

=> s 16 and lithium and battery

247494 LITHIUM

331 LITHIUMS

247613 LITHIUM

(LITHIUM OR LITHIUMS)

95777 BATTERY

76301 BATTERIES

104336 BATTERY

(BATTERY OR BATTERIES)

L7 4 L6 AND LITHIUM AND BATTERY

=> d ibib abs 14 1-86

L4 ANSWER 1 OF 86 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:928103 CAPLUS

DOCUMENT NUMBER: 137:387175

TITLE: Nonaqueous electrolyte lithium secondary
battery

INVENTOR(S): Imachi, Naoki; Nakane, Ikuro; Narukawa, Satoshi

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 17 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|------------|
| US 2002182504 | A1 | 20021205 | US 2002-158019 | 20020531 |
| JP 2002358961 | A2 | 20021213 | JP 2001-164728 | 20010531 |
| PRIORITY/APPLN. INFO.: | | | JP 2001-164728 | A 20010531 |

AB A nonaq. electrolyte secondary **battery** according to the invention comprises a pos. electrode contg. a pos. electrode active material including lithium contg. composite oxide having a layer crystal structure represented by a general formula of $\text{Li}_x\text{Mn}_a\text{Co}_b\text{Mg}_c\text{O}_2$ ($0.9 \leq x \leq 1.1$, $0.45 \leq a \leq 0.55$, $0.45 \leq b \leq 0.55$, $0 < c \leq 0.05$ and $0.9 < a+b+c \leq 1.1$ are set and M is at least one kind selected from Al, Mg, Sn, Ti and Zr), a neg. electrode contg. a neg. electrode active material capable of intercalating and deintercalating lithium ion, a separator for sepg. the pos. electrode from the neg. electrode, and a nonaq. electrolyte.

L4 ANSWER 2 OF 86 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:906792 CAPLUS

DOCUMENT NUMBER: 137:387140

TITLE: Nonaqueous electrolyte additive for improving safety of lithium ion secondary **battery**

INVENTOR(S): Park, Hong-Kyu; Choi, Jeh-Won; Lee, Yeon-Hee; An, Young-Tack; Kim, Hyeong-Jin

PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea

SOURCE: PCT Int. Appl., 21 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

DOCUMENT NUMBER: 111:198479
TITLE: Electrochemical reduction of manganese dioxide in lithium cells with aprotic electrolyte solutions. I. Electrochemical charge relations and x-ray

diffraction

measurements
AUTHOR(S): Richter, Hans Juergen; Hanisch, Uwe; Schneider, Wolfgang; Wiesener, Klaus; Kleinstueck, Karlheinz; Tobisch, Josef

CORPORATE SOURCE: Sekt. Chem., Tech. Univ. Dresden, Dresden, DDR-8027, Ger. Dem. Rep.

SOURCE: Zeitschrift fuer Physikalische Chemie (Leipzig) (1989), 270(4), 793-800

CODEN: ZPCLAH; ISSN: 0323-4479

DOCUMENT TYPE: Journal

LANGUAGE: German

AB On the basis of the discharge behavior of electrolytic MnO₂ tempered at different temps., 3 discharge stages can be formulated according to the following equations: MnO₂ + aLi⁺ + ae⁻ .fwdarw. LiaMnO₂ (0 < a .ltoreq. 0.5), LiaMnO₂ + bLi⁺ + be⁻ .fwdarw. b/0.5 - a LiaMnO₂ + b/0.5 - a Li_{0.5}MnO₂ (b .ltoreq. 0.5 - a), and Li_{0.5}MnO₂ + cLi⁺ + ce⁻ .fwdarw. Li_{0.5}+cMnO₂ (0 < c .ltoreq. 0.5). The 1st discharge stage represents a redn. in a homogeneous phase where it is supposed that Li insertion takes place in the MnO₂ lattice at the tetrahedral positions which have no

joint

faces together with MnO₆ octahedrons. The 2nd discharge stage represents a 2 phase region where the MnO₂ initial structure is transformed into the phase Li_{0.5}MnO₂. The 3rd discharge stage again represents a redn.

without

a change in the structure (Li⁺ is inserted into the newly formed phase). For .gamma.-MnO₂ tempered between 350 and 400.degree., the 1st stage extends to a discharge degree of .apprxeq.10% (a = 0.1). By the means of x-ray diffraction measurements of this MnO₂ depends on the degree of discharge, the 2 phase area was clearly detected at discharge degrees between .apprxeq.10% and .apprxeq.50%.

=> d ibib abs 17 1-86

L7 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:691890 CAPLUS

DOCUMENT NUMBER: 135:229388

TITLE: Nonaqueous electrolyte **battery** with lithium transition metal oxide cathode

INVENTOR(S): Yamaura, Kiyoshi

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 11 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| EP 1134825 | A2 | 20010919 | EP 2001-105813 | 20010308 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| JP 2001266881 | A2 | 20010928 | JP 2000-81858 | 20000317 |
| CA 2340483 | AA | 20010917 | CA 2001-2340483 | 20010313 |

CN 1314718 A 20010926 CN 2001-111610 20010316
 US 2001053483 A1 20011220 US 2001-811897 20010319
 PRIORITY APPLN. INFO.: JP 2000-81858 A 20000317
 AB A nonaq. electrolyte **battery** comprises a cathode contg. a
 Li-transition metal oxide cathode active material, an anode contg. C
 compd. or Li, and a nonaq. electrolyte interposed between the anode and
 the cathode; wherein the Li-transition metal oxide is Li_xMnO_2 or
 $\text{Li}_x\text{Mn}_{1-y}\text{Al}_y\text{O}_2$ where $x = 0.94-0.96$ and $y = 0.06-0.25$.

L7 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2002 ACS
 ACCESSION NUMBER: 2001:7553 CAPLUS
 DOCUMENT NUMBER: 134:74026
 TITLE: Layered **lithium** manganese oxide bronze and
 electrodes thereof
 INVENTOR(S): Dahn, Jeffrey R.; Paulsen, Jens M.
 PATENT ASSIGNEE(S): Chemetals Technology Corporation, USA
 SOURCE: U.S., 16 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------------|------|----------|-----------------|----------|
| US <u>6168887</u> | B1 | 20010102 | US 1999-231636 | 19990115 |

AB In a rechargeable **battery** including a cathode, an anode, and an
 electrolyte one of the electrodes comprises a layered bronze with a
 structure comprising a stack of 2 alternative layers (I and II). Layer I
 has a compn. of $\text{X}(\text{MyMn}_{1-y})\text{X}$ where M is a 3d transition metal or Al and/or
 Li. $y = 0-0.4$, and X is any atom, anion and/or a mixt. wherein Mn or M is
 surrounded by 6 anions forming the corners of an octahedron. Layer II
 contains Li atoms on L-sites that form a perfect or distorted hexagonal
 lattice. The stack is subjected to the L sites of layer II being
 surrounded by 6 atoms or anions that form the corners of an octahedron, a
 type-II layer forming the corners of an octahedron, the bronze
 comprising
 Mn in an oxidn. state of less than IV.
 REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR
 THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L7 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2002 ACS
 ACCESSION NUMBER: 2000:313649 CAPLUS
 DOCUMENT NUMBER: 132:310837
 TITLE: Cathode active mass for secondary **lithium**
batteries and their manufacture
 INVENTOR(S): Sakurai, Takeshi; Sugihara, Tadashi
 PATENT ASSIGNEE(S): Mitsubishi Materials Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| JP 2000133266 | A2 | 20000512 | JP 1998-306463 | 19981028 |

AB The cathode active mass is substituted rhombic Li manganate $\text{Li}_{1-z}\text{Na}_z\text{M}_x\text{M}'_y\text{Mn}_{1-x-y}\text{O}_2$, where M is selected from Ge, Ga, In, Sn, Sc, Nd, Sm, Eu, Gd, Dy, Ho, Y, Er, Yb, and Lu; M' is selected from Ti, Zr, V, Nb, Fe, and Al; $0 < x < 0.3$, $0 < y < 0.3$, and $0 < (x+y) < 0.3$; and $0 < z < 1$. The active mass is prep'd. by mixing Na_2CO_3 and Mn oxide or Mn acetate with oxides, hydroxides, and/or chlorides of M and M'; firing the mixt. at 650-750.degree. in N for .gtoreq.5 h; adding LiBr to the fired mixt. at a Li/Na mol ratio 6-25; reacting the mixt. in a n-hexanol soln. in a glass reaction tank (or firing some selected components and adding the fired material and other components with the $\text{LiOH}\cdot\text{H}_2\text{O}$ to the reaction tank) at 130-160.degree. for 2-30 h for ion exchange of Na by Li; repeating the ion exchange by using new batches of LiBr; washing the reaction product with EtOH; and vacuum drying.

L7 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1998:596036 CAPLUS

DOCUMENT NUMBER: 129:205207

TITLE: Secondary lithium batteries with lithium and magnesium containing oxide cathodes

INVENTOR(S): Igawa, Akiko; Tsuruoka, Shigeo; Yoshikawa, Masanori; Muranaka, Kiyoshi; Komatsu, Yoshimi; Yamauchi, Shuko

PATENT ASSIGNEE(S): Hitachi, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 10241691 | A2 | 19980911 | JP 1997-354358 | 19971224 |
| PRIORITY APPLN. INFO.: | | | JP 1996-343041 | 19961224 |

AB The **batteries** use cathodes composed layer structured LiMO_2 , where M = Mn, Co, Ni, and/or Fe, and part of Li is replaced by Mg. The cathode active mass is preferably $\text{Li}_w\text{Mg}_v\text{Ni}_x\text{M}_1\text{yN}_z\text{O}_2$, where $\text{M}_1 = \text{Mn, Co, and/or Fe}$, $\text{N} = \text{Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B}$, $0 \leq w \leq 1.2$, $0.001 \leq v \leq 0.02$, $0.5 \leq x \leq 0.85$, $0.05 \leq y \leq 0.5$, and $0 \leq z \leq 0.2$; $\text{Li}_w\text{Mg}_v\text{Co}_x\text{M}_2\text{z}'\text{O}_2$, where $\text{M}_2 = \text{Ni, Mn, Fe, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, YH, Bi and/or B}$,

and $0 \leq z' \leq 0.5$; $\text{Li}_w\text{Mg}_v\text{Mn}_x\text{M}_3\text{z}''\text{O}_2$, where $\text{M}_3 = \text{Ni, Co, Fe, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B}$; or $\text{Li}_w\text{Mg}_v\text{Fe}_x\text{M}_4\text{z}'''\text{O}_2$,

where

$\text{M}_4 = \text{Ni, Co, Mn, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B}$.